

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

## Review: Unit 5 Test 1– Speed, Velocity, and Acceleration

Define motion:

What is a reference point?

How can an object be moving and stationary at the same time?

The rate at which an object moves is \_\_\_\_\_. Formula: \_\_\_\_\_

The speed and direction of a moving object is \_\_\_\_\_. Formula: \_\_\_\_\_

\_\_\_\_\_ is defined as a change in velocity (speed or direction). Formula:  $A = (V_f - V_i) \div t$

Three types of acceleration and an example of each:

1.

Example:

2.

Example:

3.

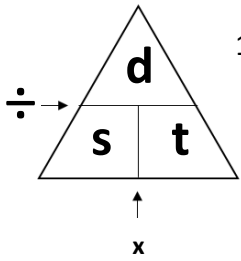
Example:

**Directions:** Label each example as speed (S), velocity (V), or acceleration (A).

_____ 4. A roller coaster goes from 0 to 120 mi/hr in less than 4 seconds.	_____ 5. A couple cruises at 30 mi/hr in their hang glider.	_____ 6. A plane flies 550 mi/hr South toward Hawaii.
_____ 7. A cheetah runs 93 km/hr.	_____ 8. Linsey Vonn skis downhill at 80 mi/hr.	_____ 9. A racecar driver is driving at 200 mi/hr and then turns left.

**Directions:** Place an **X** in the correct **answer(s)** from the options provided. Choose all that apply.

10. Speed		11. Acceleration	
<input type="checkbox"/> m/s	<input type="checkbox"/> cm/s	<input type="checkbox"/> km/hr <sup>2</sup>	<input type="checkbox"/> m/s
<input type="checkbox"/> mi	<input type="checkbox"/> m/hr	<input type="checkbox"/> mi/hr <sup>2</sup>	<input type="checkbox"/> km/s <sup>2</sup>
<input type="checkbox"/> km	<input type="checkbox"/> m/s <sup>2</sup>	<input type="checkbox"/> m/hr	<input type="checkbox"/> m/s



12.

Formula for SPEED	Formula for DISTANCE	Formula for TIME

13. Lauren walks 100 m in 30 seconds. What must her speed have been to travel this distance?

Given (w/ Units):	Formula:	Substitution (w/ Units):	Answer (w/ Units):

14. A girl cycles for 3 hours at an average speed of 40 km/h. What distance did she travel?

Given (w/ Units):	Formula:	Substitution (w/ Units):	Answer (w/ Units):

15. A train travels at a speed of 95 km/hr and travels a distance of 722 kilometers. How long did it take the train to complete its journey?

Given (w/ Units):	Formula:	Substitution (w/ Units):	Answer (w/ Units):

16. A person jogs 5.0 km in 27 minutes, then 3.0 km in 18 minutes, and finally 1.0 km in 6 minutes. What is the jogger's average speed in km per minute?  $s_{avg} = d_{total} \div t_{total}$

Given (w/ Units):	Formula:	Substitution (w/ Units):	Answer (w/ Units):

17. A roller coaster is moving at 3 m/s at the top of a hill. Three seconds later it reaches the bottom of the hill moving at 27 m/s. What was the acceleration of the coaster?  $a = (V_f - V_i) \div t$

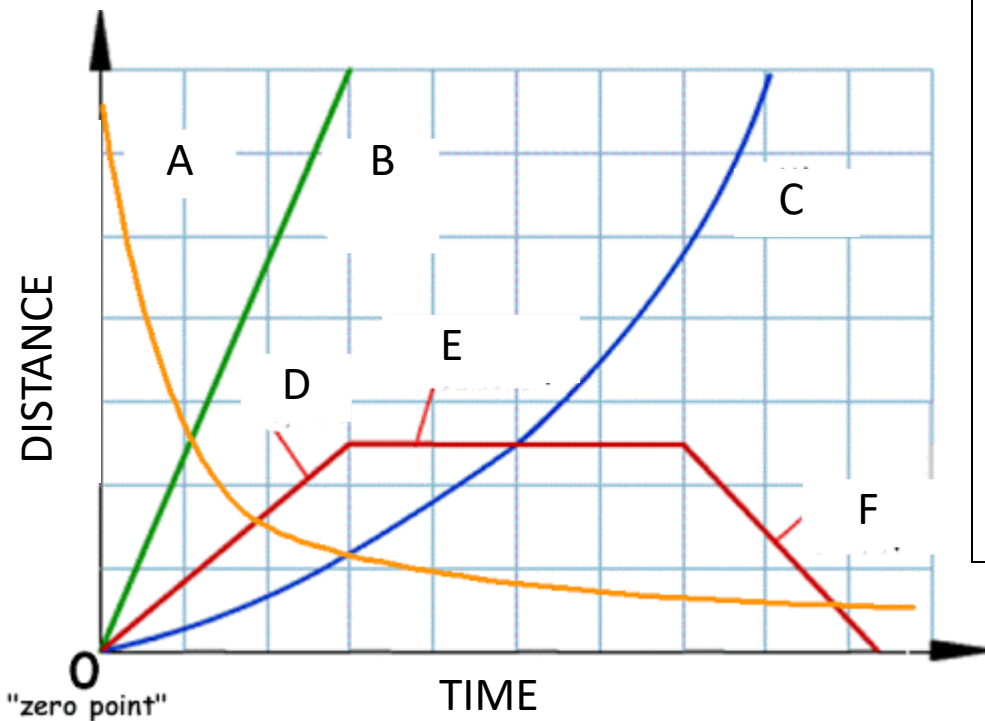
Given (w/ Units):	Formula:	Substitution (w/ Units):	Answer (w/ Units):

18. A car traveling at 17 m/s starts to brake steadily. It comes to a complete stop in 8 seconds. What is its acceleration?  $a = (V_f - V_i) \div t$

Given (w/ Units):	Formula:	Substitution (w/ Units):	Answer (w/ Units):

19. A train travels the 1,350 km from Gainesville, Virginia to Orlando, Florida in in 9.5 hours. What was the trains velocity?  $V = d \div t$

Given (w/ Units):	Formula:	Substitution (w/ Units):	Answer (w/ Units):



20. Match the description with the letter on the graph.

Fast, constant speed \_\_\_\_\_

Stopped \_\_\_\_\_

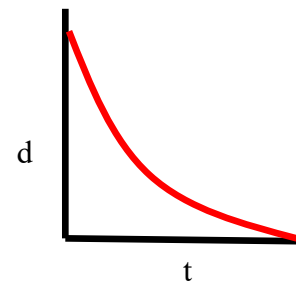
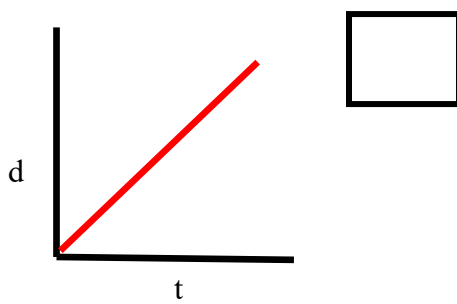
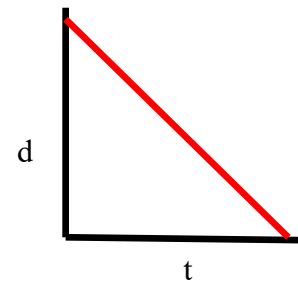
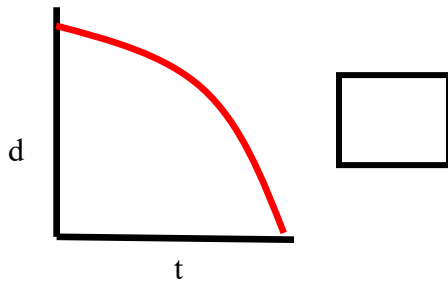
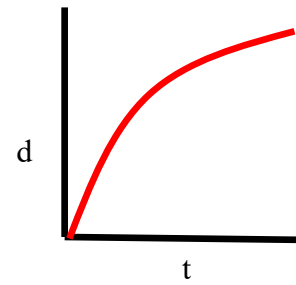
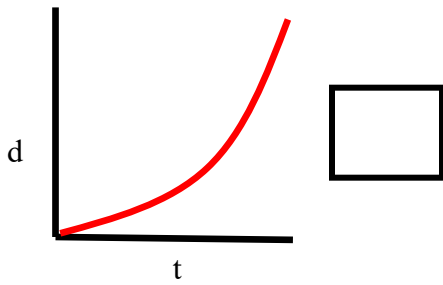
Returning to origin \_\_\_\_\_

Slowing down \_\_\_\_\_

Increasing speed \_\_\_\_\_

20. Identify the distance- time graphs with the following descriptions. Place the letter of the description in the box by the graph.

- A. The car is traveling at a constant speed away from the origin(home).
- B. The car is traveling at a constant speed toward the origin.
- C. The car is traveling toward the origin with decreasing speed.
- D. The car is traveling away from the origin with decreasing speed.
- E. The car is traveling toward the origin with increasing speed.
- F. The car is traveling away from the origin with increasing speed.



Name: Answer Key

## Review: Unit 5 Test 1– Speed, Velocity, and Acceleration

Define motion: **Change in an object's position over time**

What is a reference point? **A stationary object used for comparison to determine if an object is moving**

How can an object be moving and stationary at the same time? **An object can be stationary and moving at the same time when compared to different reference points.**

The rate at which an object moves is **SPEED** Formula:  **$s = d/t$**

The speed and direction of a moving object is **VELOCITY** Formula:  **$V = d/t$  with a direction**

**ACCELERATION** is defined as a change in velocity (speed or direction). Formula:  **$A = (V_f - V_i) \div t$**

Three types of acceleration and an example of each:

**1. POSITIVE**

Example: **A RUNNER INCREASING SPEED DURING A RACE**

**2. NEGATIVE**

Example: **A CAR SLOWING FOR A STOP LIGHT**

**3. CONTINUOUS (TURNING)**

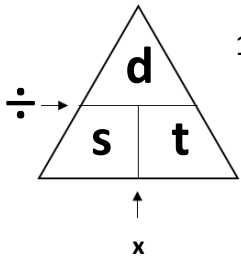
Example: **MOON ORBITING THE EARTH**

**Directions:** Label each example as speed (S), velocity (V), or acceleration (A).

<b>A</b> 4. A roller coaster goes from 0 to 120 mi/hr in less than 4 seconds.	<b>S</b> 5. A couple cruises at 30 mi/hr in their hang glider.	<b>V</b> 6. A plane flies 550 mi/hr South toward Hawaii.
<b>S</b> 7. A cheetah runs 93 km/hr.	<b>V</b> 8. Linsey Vonn skis downhill at 80 mi/hr.	<b>A</b> 9. A racecar driver is driving at 200 mi/hr and then turns left.

**Directions:** Place an **X** in the correct **answer(s)** from the options provided. Choose all that apply.

10. Speed	11. Acceleration
<input checked="" type="checkbox"/> m/s	<input type="checkbox"/> km/hr <sup>2</sup>
<input type="checkbox"/> cm/s	<input type="checkbox"/> m/s
<input type="checkbox"/> mi	<input type="checkbox"/> mi/hr <sup>2</sup>
<input type="checkbox"/> m/hr	<input type="checkbox"/> km/s <sup>2</sup>
<input type="checkbox"/> km	<input type="checkbox"/> m/hr
<input type="checkbox"/> m/s <sup>2</sup>	<input type="checkbox"/> m/s



12.

Formula for SPEED	Formula for DISTANCE	Formula for TIME
$s = d/t$	$d = s * t$	$t = d/s$

13. Lauren walks 100 m in 30 seconds. What must her speed have been to travel this distance?

Given (w/ Units):	Formula:	Substitution (w/ Units):	Answer (w/ Units):
$d = 100 \text{ m}$ $t = 30 \text{ s}$	$s = d/t$	$s = 100\text{m}/30\text{s}$	$s = 3.3 \text{ m/s}$

14. A girl cycles for 3 hours at an average speed of 40 km/h. What distance did she travel?

Given (w/ Units):	Formula:	Substitution (w/ Units):	Answer (w/ Units):
$s = 40 \text{ km/h}$ $t = 3 \text{ h}$	$d = s * t$	$d = 40 \text{ km/h} * 3 \text{ h}$	$d = 120 \text{ km}$

15. A train travels at a speed of 95 km/hr and travels a distance of 722 kilometers. How long did it take the train to complete its journey?

Given (w/ Units):	Formula:	Substitution (w/ Units):	Answer (w/ Units):
$d = 722 \text{ km}$ $s = 95 \text{ km/h}$	$t = d/s$	$t = 722\text{km}/95 \text{ km/h}$	$t = 7.6\text{h}$

16. A person jogs 5.0 km in 27 minutes, then 3.0 km in 18 minutes, and finally 1.0 km in 6 minutes. What is the jogger's average speed in km per minute?  $s_{\text{avg}} = d_{\text{total}} \div t_{\text{total}}$

Given (w/ Units):	Formula:	Substitution (w/ Units):	Answer (w/ Units):
$d = (5 + 3 + 1)$ $d = 9 \text{ km}$ $t = (27 + 18 + 6)$ $t = 51 \text{ min}$	$s = d/t$	$s = 9 \text{ km} / 51 \text{ min}$	$s = 0.18 \text{ km/min}$

17. A roller coaster is moving at 3 m/s at the top of a hill. Three seconds later it reaches the bottom of the hill moving at 27 m/s. What was the acceleration of the coaster?  $a = (V_f - V_i) \div t$

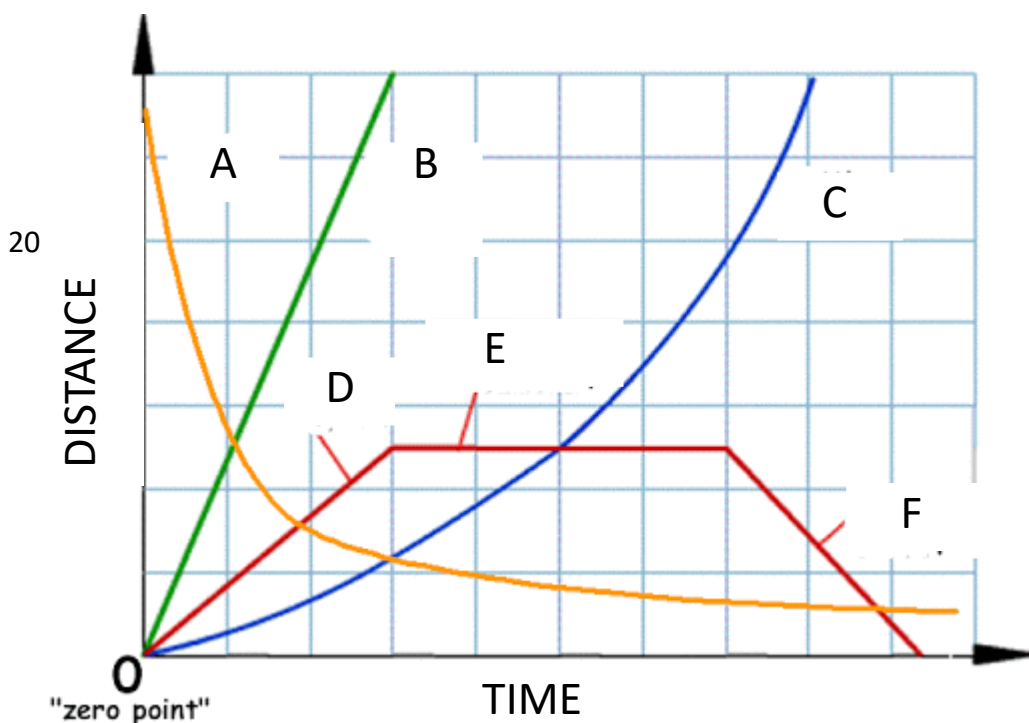
Given (w/ Units):	Formula:	Substitution (w/ Units):	Answer (w/ Units):
$V_f = 27 \text{ m/s}$ $V_i = 3 \text{ m/s}$ $t = 3 \text{ s}$	$a = (V_f - V_i) \div t$	$a = \frac{(27\text{m/s} - 3\text{m/s})}{3\text{s}}$	$a = 8\text{m/s}^2$

18. A car traveling at 17 m/s starts to brake steadily. It comes to a complete stop in 8 seconds. What is its acceleration?  $a = (V_f - V_i) \div t$

Given (w/ Units):	Formula:	Substitution (w/ Units):	Answer (w/ Units):
$V_f = 0 \text{ m/s}$ $V_i = 17 \text{ m/s}$ $t = 8 \text{ s}$	$a = (V_f - V_i) \div t$	$a = \frac{(0\text{m/s} - 17\text{m/s})}{8\text{s}}$	$A = - 2.13 \text{ m/s}^2$

19. A train travels the 1,350 km from Gainesville, Virginia to Orlando, Florida in in 9.5 hours. What was the trains velocity?  $V = d \div t$

Given (w/ Units):	Formula:	Substitution (w/ Units):	Answer (w/ Units):
$d = 1,350 \text{ km}$ $t = 9.5 \text{ h}$	$V = d \div t$	$V = 1350 \text{ km}/9.5\text{h}$	$V = 142.11 \text{ km/h}$ South or toward Florida



20. Match the description with the letter on the graph.

Fast, constant speed  B

Stopped  E

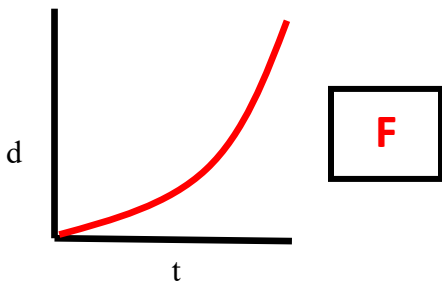
Returning to origin  F

Slowing down  A

Increasing speed  C

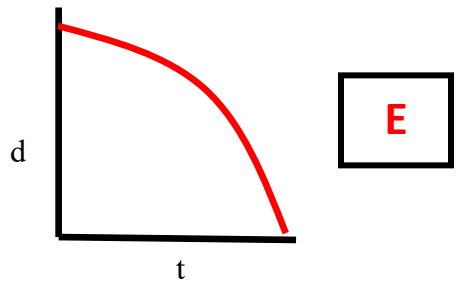
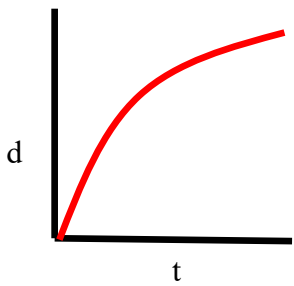
21. Identify the distance- time graphs with the following descriptions. Place the letter of the description in the box by the graph.

- A. The car is traveling at a constant speed away from the origin.
- B. The car is traveling at a constant speed toward the origin.
- C. The car is traveling toward the origin with decreasing speed.
- D. The car is traveling away from the origin with decreasing speed.
- E. The car is traveling toward the origin with increasing speed.
- F. The car is traveling away from the origin with increasing speed.



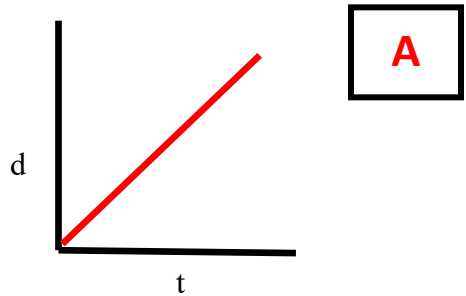
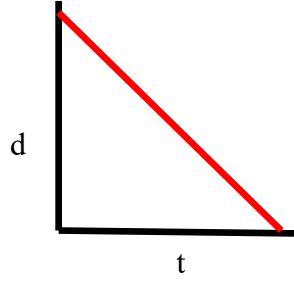
**F**

**D**



**E**

**B**



**A**

**C**

